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BEEKEEPING AND THE WAR

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BUREAU OF ENTOMOLOGY

IN former times, beekeeping was a more important branch of agriculture than at present, but the development of trade with the tropics made possible the bringing in of cane sugar and honey production decreased in relative importance. It is far from being a lost art, however, for in normal years the United States produces about 250,000,000 pounds of honey and the amount is increasing steadily. That this much honey is available is a matter of surprise to most people, for many American families never include honey in their menus, and the only honey which many people eat is that which is concealed in cakes for the purpose of keeping them moist for a considerable time. The small amount produced is sufficient to provide a little over two pounds annually for each person, equivalent only to three per cent. of the sugar consumed in years of sugar plenty.

The amount of sugar on every hand in the form of nectar is so great as to stagger the imagination, but some estimate is possible. In a year of prosperity a colony of bees consumes for its own uses a great amount of honey, this amount having been variously calculated as from 200 to 600 pounds. The lower estimates doubtless obtain only for weak colonies, and the average amount may be placed conservatively at 400 pounds. While the bees are gathering this for their own use they are perhaps providing 50 pounds additional which the beekeeper may take, making the estimated total gathering of the colony 450 pounds. An apiary of 100 colonies will frequently, on this estimate, gather $22\frac{1}{2}$ tons of honey in a season. This comes from a territory included within a radius of about two miles. While the beekeeper harvests only a meager $2\frac{1}{2}$ tons, the total of $22\frac{1}{2}$ tons has been produced by the nectar-producing plants in that area. This, it should be remembered, is sugar produced in a region where most persons would not recognize the presence of any sugar production. To assure the sceptical reader, it may be stated that there are often

apiaries where the average yield of surplus honey is over 200 pounds, this being the honey which the beekeeper takes for his own use. Yields of 600 pounds to the colony have even been recorded for unusual circumstances.

It is conservative to state that there is every year produced in nectar-producing flowers in the United States more sugar than is consumed by the American people. Obviously, since the bees consume so much, only a small part of this vast wealth can be conserved for human food. The honeybee, so often compelled to serve as an example of industry, does not appear as an efficient collector of human food, when its necessary consumption is recalled. However, any agency for the conservation of this vast sugar supply must be one which is ever on the alert, since the nectar is so soon lost after it is produced. No agency other than the honeybee has as yet been found which will save any of it for man.

Speculation, such as the above, may be subject to criticism, but an unanswerable argument lies in the records of commercial beekeepers. There are thousands of places where commercial apiaries are now established and as the industry expands beekeepers do not experience difficulty in locating additional apiaries all around their home locations. Within the last decade commercial beekeeping has shown a rapid development and yet it would be extremely difficult to find a place where there are so many colonies as materially to reduce the crop. In a few localities beekeeping has been especially developed and if the same progress had been made throughout equally favorable localities, the honey crop would be more than twice what it is to-day. Any one familiar with the conditions surrounding the industry must realize that the crop may be increased ten times without increasing the cost of production per pound.

Why has this sugar supply been so generally wasted? It is not easy to answer this question, but the answer probably lies in the nature of the beekeeping industry. Beekeeping is applied animal behavior. The honeybee is still, after years of human care, in no sense a domestic animal. Its reactions to external stimuli are, so far as known, what they were when cave-men first robbed them of their honey. Man has by selection in breeding changed the color of the abdominal bands in certain strains of Italian bees and he has selected those which are less inclined to sting, but no progress has been made in any fundamental change of bee nature. The successful beekeeper

is therefore necessarily a student of bee behavior, so that he may adapt the activities of the bee colony to his ends. He has learned that by providing the proper conditions he may not only increase the gathering power of the bees but he may have a larger part of the honey stored in such shape that he may take it. He has also learned that by attention he may reduce swarming, thus preventing the bees from wasting their energies in making more colonies when he desires honey rather than more bees. But bee behavior is rather a complex subject into which to initiate the average citizen. It is a subject of impelling interest if properly presented but it is so far from the type of study necessary for other branches of agriculture that an insufficient number of people have taken up the work with sufficient thoroughness.

Beekeeping differs from other branches of agriculture in that little land is needed in its pursuit and only in rare cases is it necessary to use land which is useful for other agricultural purposes. The production of honey does not deplete the soil. An important consideration is that the commercial beekeeper is exceedingly busy at just the time when the man engaged in general farming can not find time to give to bees. Beekeeping does not mix well with general farming and must usually be combined either with work other than general farming or with some other specialized branch of agriculture. To a large degree this takes the beekeeper out of the country and it is a fact that most commercial beekeepers live in towns and suburbs. The small amount of land needed, combined with the small necessary expenditure for apparatus makes it safe to say that in proportion to the investment there is no other branch of agriculture which yields so great a return. However, it must not be assumed that beekeeping is a rapid and easy road to wealth. The returns which the beekeeper receives are directly proportional to the labor and especially to the intelligent care which he invests.

The literature on beekeeping has not been of a type which would induce people to take up the work as a commercial industry. The trouble is not that there are too few beekeepers, for the United States boasts about 800,000, but is rather that relatively few have looked on beekeeping as a possible means of livelihood. A better presentation of the subject might serve to overcome this attitude. No effort need be made to induce more people to keep bees: rather an effort might be made to induce half or more of the present bee owners to sell their bees

to good beekeepers in order that the bees might be enabled to produce a crop with the proper care. At present several of the agricultural colleges are maintaining good courses in beekeeping, most of the states have laws providing for the inspection of apiaries to prevent their destruction from infectious diseases and other agencies are assisting in the upbuilding of the industry.

To waste all of this bounteous sugar supply is an economic loss of the first magnitude at any time but never before has this been so forcibly brought home as recently. When the normal sugar supply was reduced people realized as never before the need of a home supply, one not so subject to barbaric ravages on commerce and the perplexities of a restricted production and a more restricted commerce. It is a matter of regret that in 1917 the United States did not save more of the vast store of sugar that is free on every hand. The German nation, with its far-reaching plans for world destruction, had for some years past fostered beekeeping by the giving of bonuses to employees of the national railways if they would engage in beekeeping and similar minor branches of agriculture. We may well pride ourselves that the nation is not dependent on such a means of development but the United States would have been better able to do its share in the war if more attention had been directed to activities such as this.

The entrance of the nation into the war and the shortage of sugar through which part of the country has just passed has wakened an interest in beekeeping, and it is to be hoped that this interest will not lapse when peace is made. Many of the agricultural colleges have begun to urge the better care of bees, the apiary inspectors have assisted in the work, the five journals devoted to beekeeping have rendered valuable service and beekeepers throughout the country have realized more than ever before the need of building up the industry. On the declaration of war the Federal Department of Agriculture began a campaign for increasing the honey crop and the response of beekeepers throughout the country has been most encouraging. It is not the purpose of this article to report what has been done in all lines to bring about this much desired result. An important factor in the increased crop will be the higher price of honey on wholesale markets which has come because of the increased need. It would be difficult to convince beekeepers of this need did not the market prove it to them.

It is desirable, however, to mention one line of activity

which from its nature promises the best results. Mention has been made of the fact that beekeeping is applied animal behavior and that the peculiarity of the beekeeper's work has been a retarding factor in the developing of beekeeping as a commercial industry. Literature does not seem to fill the needs of the case for all the necessary details have been printed in a multitude of forms, as government bulletins and as books. It appears that to an unusual degree personal instruction is needed in making better beekeepers, at least until there are more of them available to act as instructors to others in their communities. The Department of Agriculture has therefore incorporated work in beekeeping in the extension activities and while this work is new and tangible results can not be expected so soon, the interest aroused gives assurance of the good which may be expected from this method of instruction. For the author to urge that extension work in beekeeping is more important than in other lines places him liable to a charge of bias but it is pertinent to point out the greater desirability of personal instruction in these branches of agriculture which involve unusual lines of effort and which are somewhat complex in character. The extension work in beekeeping is small in extent. It has been a difficult task to find available beekeepers who have the necessary equipment in a knowledge of bee behavior and also in the practices of the apiary. There are plenty of beekeepers in the United States who have the requisite training, but the improvement of the honey market, due in no small degree to the light thrown on the subject by the recently organized market news service, has made commercial beekeeping so attractive to those who are equipped for it that few of the properly qualified men have been willing to take up this work and those engaged in the work are taking it up as a patriotic labor. The nature of the extension work and the earnestness of the field men who are doing it give promise for most helpful results in saving for the American people more of the vast store of sugar now so largely wasted. It must not be expected that the honey crop of 1918 will be ten times any previous crop, or even twice as large. Much depends on the season, until such time as better beekeeping makes the crop less dependent on seasonal variation. It is safe to say, however, that patriotic beekeepers from one end of the country to the other will make a greater effort than ever before to do their share. They will be encouraged in this by the realization that they are helping. It will also help them to know that others are interested in their success. They will plan to increase their

apiaries with the assurance that the beekeeping industry has now the best possible opportunity to prove its usefulness and to establish its rightful place among the multitude of agricultural industries. It would be an untrue and even ridiculous assumption to prophesy that beekeeping will result in a reduction in the sugar consumption of the American people, but its growth will enable us to have a larger supply of a sweet which might with profit replace a considerable amount of the jellies, jams and sirups now so widely used. More honey would serve to reduce the consumption of inferior food products for, as beekeepers so often tell each other, it is "Nature's own sweet."